CLAIMS

1. (original) A method for communicating information related to a plurality of working components from each such working component to a central location, comprising the steps of:

attaching and operably connecting a transceiver module to each working component, said transceiver module including at least a microcontroller and a radio transceiver; and

positioning an area control module in the vicinity of the plurality of working components, said area control module including at least a microprocessor and a radio transceiver, and said area control module being in communication with said central location;

wherein, upon occurrence of a predetermined event,

the microcontroller associated with one of said transceiver modules initiating transmission of a message through the radio transceiver, said message containing the identification of and the status of the working component;

the message being received by the radio transceivers associated with one or more neighboring transceiver modules;

each of said receiving transceiver modules making a decision as to whether to re-transmit said message based on a determination of whether the transceiver module is on a designated path between the transceiver module from which the message originated and the area control module;

re-transmission of the message continuing along said designated path until the message is received at the area control module; and

said area control module communicating said message to the central location.

2. (original) A method as recited in claim 1, in which a control message containing instructions can be initiated from the central location, communicated to the area control module for subsequent transmission to one or more intended transceiver modules, said area control module transmitting the message to one or more receiving transceiver modules within its transmission range, each of the receiving transceiver modules making a decision as to whether to re-transmit said message based on a determination of whether the receiving transceiver module is on a designated path between the area control module and the one or more intended transceiver modules.

3. (original) A method as recited in claim 2, in which the one or more intended transceiver modules, upon receipt of the control message, execute the instructions contained therein.

4. (original) A method as recited in claim 3, in which each transceiver module further includes at least one actuation component for manipulating the operation of the working component based on instructions contained in the control message.

5. (original) A method as recited in claim 1, in which each transceiver module further includes one or more sensors for sensing various operational parameters representative of

the status of the working component to which the transceiver module is secured, each such sensor communicating the status information to the microcontroller of the transceiver module for interpretation by a diagnostics processor integral to the microcontroller and then subsequent transmission through the radio transceiver.

6. (original) A method as recited in claim 5, in which each transceiver module further includes at least one actuation component for manipulating the operation of the working component in response to the status information communicated to the microcontroller from the one or more sensors.

7. (original) A method as recited in claim 1, in which said predetermined event is a prompt based on a predetermined schedule.

8. (original) A method as recited in claim 5, in which said predetermined event is the receipt of certain status information by the microcontroller.

9. (original) A method as recited in claim 2, in which said predetermined event is the receipt of a control message.

10. (original) A method as recited in claim 1, in which the microcontroller of each said transceiver module executes embedded code stored in an associated memory for coordinating function and control of the transceiver module.

11. (original) A method as recited in claim 10, in which a unique code is stored in the associated memory for identifying the particular transceiver module.

12. (currently amended) A method as recited in claim 10, in which information and data associated with the maintenance and operation of the ~~transceiver module~~ working component is also stored in the associated memory.

13. (original) A method as recited in claim 1, in which the radio transceivers associated with each transceiver module operate in an unlicensed band.

14. (original) A method as recited in claim 1, in which the radio transceivers associated with each transceiver module operate at power levels no more than 500 mW.

15. (original) A method as recited in claim 1, in which he microcontroller of the transceiver module has an integral clock function.

16. (original) A system for communicating information related to a plurality of working components, comprising:

a plurality of transceiver modules, each such transceiver module being secured and operably connected to working component, each such transceiver module including at least a microcontroller and a radio transceiver; and

at least one area control module positioned in the vicinity of the plurality of transceiver modules, said area control module including at least a microprocessor and a radio transceiver;

a network support server in communication with said area control module; and

one or more display and control units in communication with said network support server;

wherein, upon occurrence of a predetermined event,

the microcontroller associated with one of said transceiver modules initiating transmission of a message through the radio transceiver, said message containing the identification of and the status of the working component;

the message being received by the radio transceivers associated with one or more neighboring transceiver modules;

each of said receiving transceiver modules making a decision as to whether to re-transmit said message based on a determination of whether the transceiver module is on a designated path between the transceiver module from which the message originated and the area control module;

re-transmission of the message continuing along said designated path until the message is received at the area control module;

said area control module communicating said message to the network support server; and

said network support server analyzing said message, and communicating the status information contained therein to the one or more display and control units for review

by an end user.

17. (original) A system as recited in claim 16, in which the end user can initiate a control message containing instructions through the display and control units, said message being communicated to the area control module through the network support server for subsequent transmission to one or more intended transceiver modules, said area control module transmitting the message to one or more receiving transceiver modules within its transmission range, each of the receiving transceiver modules making a decision as to whether to re-transmit said message based on a determination of whether the receiving transceiver module is on a designated path between the area control module and the one or more intended transceiver modules.

18. (original) A system as recited in claim 17, in which the one or more intended transceiver modules, upon receipt of the control message, execute the instructions contained therein.

19. (original) A system as recited in claim 18, in which each transceiver module further includes at least one actuation component for manipulating the operation of the working component based on instructions contained in the control message.

20. (original) A system as recited in claim 16, in which each transceiver module further includes one or more sensors for sensing various operational parameters representative of

the status of the working component to which it is secured, each such sensor communicating such status information to the microcontroller of the transceiver module for interpretation by a diagnostics processor integral to the microcontroller and then subsequent transmission through the radio transceiver.

21. (original) A system as recited in claim 20, in which each transceiver module further includes at least one actuation component for manipulating the operation of the working component in response to the status information communicated to the microcontroller from the one or more sensors.

22. (original) A system as recited in claim 16, in which said predetermined event is a prompt based on a predetermined schedule.

23. (original) A system as recited in claim 20, in which said predetermined event is the receipt of certain status information by the microcontroller.

24. (original) A system as recited in claim 17, in which said predetermined event is the receipt of a control message.

25. (original) A system as recited in claim 16, in which the microcontroller of each said transceiver module executes embedded code stored in an associated memory for coordinating function and control of the transceiver module.

26. (original) A system as recited in claim 25, in which a unique code is stored in the associated memory for identifying the particular transceiver module.

27. (currently amended) A system as recited in claim 25 in which information and data associated with the maintenance and operation of the ~~transceiver module in~~ working component is also stored in the associated memory.

28. (original) A system as recited in claim 16, in which the radio transceivers associated with each transceiver module operate in an unlicensed band.

29. (original) A system as recited in claim 16, in which the radio transceivers associated with each transceiver module operate at power levels no more than 500 mW.

30. (original) A communications network for the monitoring and control of a plurality of independent working components, comprising:

a plurality of transceiver modules, each such transceiver module being secured and operably connected to one of said working components, each such transceiver module including at least a microcontroller for controlling operation and function of the transceiver module, and a radio transceiver;

at least one area control module positioned in the vicinity of the plurality of transceiver modules, said area control module including at least a microprocessor and a radio

transceiver;

a network support server in communication with said area control module; and

one or more display and control units in communication with said network support server;

wherein a diagnostics message from one of said transceiver modules containing status information associated with the working component to which said one transceiver module is secured is (a) transmitted through the radio transceiver associated with the transceiver module, (b) received by one or more neighboring transceiver modules, (c) selectively re-transmitted by receiving transceiver modules until received by the area control module, and (d) communicated to the network support server by the area control module;

said network support server analyzing said message, and communicating the status information contained therein to the one or more display and control units for review by an end user.

31. (original) A communications network as recited in claim 30, wherein a control message initiated by the end user through one of the control and display units, and containing instructions for one or more intended transceiver modules, is (a) communicated to the network support server, (b) communicated from the network support server to the area control module, (c) transmitted by the area control module to one or more receiving transceiver modules within its transmission range, (d) selectively re-transmitted by the receiving transceiver modules until received by the one or more intended transceiver modules;

each of the intended transceiver modules, upon receipt of the control message,

executing the instructions contained therein.

32. (original) A communication network as recited in claim 31, in which the control and display units are in communication with the network support server through an information network.

33. (original) A communication network as recited in claim 32, in which the information network is the Internet.

34. (original) A method for communicating information related to a plurality of working components from each such working component to a network access point, comprising the steps of:

attaching and operably connecting a transceiver module to each working component, said transceiver module including at least a microcontroller for controlling operation and function of the transceiver module, and a radio transceiver;

wherein, upon occurrence of a predetermined event,

the microcontroller associated with one of said transceiver modules initiating transmission of a message through the radio transceiver, said message containing the identification of and the status of the working component;

the message being received by the radio transceivers associated with one or more neighboring transceiver modules;

each of said neighboring transceiver modules making a decision as to

whether to re-transmit said message based on a determination of whether the transceiver module is on a designated path between the transceiver module from which the message originated and the network access point;

re-transmission of the message continuing along said designated path until the message is received at the network access point.

35. (previously amended) A method as recited in claim 34, in which a control message containing instructions can be transmitted from the network access point to one or more intended transceiver modules by transmitting the message to one or more receiving transceiver modules within transmission range of the network access point, each of the receiving transceiver modules making a decision as to whether to re-transmit said message based on a determination of whether the receiving transceiver module is on a designated path between the network access point and the one or more intended transceiver modules.

36. (previously added) A method for communicating information related to a plurality of working components from each such working component to a central location, comprising the steps of:

attaching and operably connecting a transceiver module to each working component, said transceiver module including at least a microcontroller and a radio transceiver operating at a power level of no more than 500 mW; and

positioning an area control module in the vicinity of the plurality of working components, said area control module including at least a microprocessor and a radio transceiver,

and said area control module being in communication with said central location;

wherein, upon occurrence of a predetermined event,

the microcontroller associated with one of said transceiver modules initiating transmission of a message through the radio transceiver, said message containing the identification of and the status of the working component;

the message being received by the radio transceivers associated with one or more neighboring transceiver modules;

each of said receiving transceiver modules making a decision as to whether to re-transmit said message based on a determination of whether the transceiver module is on a designated path between the transceiver module from which the message originated and the area control module;

re-transmission of the message continuing along said designated path until the message is received at the area control module; and

said area control module communicating said message to the central location.

37. (previously added) A method for communicating information related to a plurality of working components from each such working component to a central location, comprising the steps of:

attaching and operably connecting a transceiver module to each working component, said transceiver module including at least a microcontroller and a radio transceiver operating in the 902 MHz to 928 MHz frequency band or the 2.40 GHz to 2.48 GHz frequency

band; and

positioning an area control module in the vicinity of the plurality of working components, said area control module including at least a microprocessor and a radio transceiver, and said area control module being in communication with said central location;

wherein, upon occurrence of a predetermined event,

the microcontroller associated with one of said transceiver modules initiating transmission of a message through the radio transceiver, said message containing the identification of and the status of the working component;

the message being received by the radio transceivers associated with one or more neighboring transceiver modules;

each of said receiving transceiver modules making a decision as to whether to re-transmit said message based on a determination of whether the transceiver module is on a designated path between the transceiver module from which the message originated and the area control module;

re-transmission of the message continuing along said designated path until the message is received at the area control module; and

said area control module communicating said message to the central location.